

CLAIMS

1. An air conditioning system for conditioning the space within an enclosure having at least one inlet and one outlet, said system comprising:

first and second liquid/air heat exchangers;

said first heat exchanger having an opening for receiving fresh air from the environment and for propelling the fresh air through said first heat exchanger to exchange heat with the liquid before it is entered into said enclosure, and

said second heat exchanger having an opening for receiving air from the enclosure and for propelling it through said second heat exchanger to exchange heat with the liquid before it is expelled into the atmosphere.

2. The system as claimed in claim 1, further comprising a heat pump, said first and second heat exchangers being in fluid communication with each other through said heat pump.

3. The system as claimed in claim 1, wherein each of said first and second heat exchangers comprising:

a housing having a liquid reservoir at its lower section and an evaporative media at its upper section;

a dripping chamber between said reservoir and said evaporative media;

liquid outlets disposed above said media;

means for forcing air to enter said housing and form a counter-flow relative to the liquid flow exiting from said liquid outlets, and

means for propelling brine from said reservoir to said liquid outlets.

4. The system as claimed in claim 2, wherein said heat pump comprising:

an evaporator;

a condenser, and

a refrigerant compressor and an expansion valve interconnecting said evaporator and said condenser.

5. The system as claimed in claim 4, wherein said heat pump further comprising means for reversing the flow of said refrigerant.
6. The system as claimed in claim 1, further comprising conduit means directly interconnecting said reservoirs.
7. The system as claimed in claim 1, wherein each of said reservoirs is in fluid communication with said heat pump via pump means.
8. The system as claimed in claim 4, wherein the outlet from said evaporator is in fluid communication with the liquid outlets of said second heat exchanger and the reservoir of said second heat exchanger is in fluid communication with the liquid outlets of said first heat exchanger.
9. The system as claimed in claim 7, further comprising a multi-way valve operationally connected between said reservoirs and said heat pump.
10. The system as claimed in claim 7, wherein the reservoir of said first heat exchanger is in fluid communication with said evaporator and the reservoir of said second heat exchanger is in fluid communication with said condenser.
11. The system as claimed in claim 7, wherein the reservoir of said first heat exchanger is in fluid communication with said condenser and the reservoir of said second heat exchanger is in fluid communication with said evaporator.
12. The system as claimed in claim 3, wherein said means for forcing air into said housing is a fan located above said liquid outlets.
13. The system as claimed in claim 12, further comprising a drift eliminator located between said liquid outlets and said fan.
14. The system as claimed in claim 1, further comprising a humidifier disposed in the passageway leading from said first heat exchanger to said enclosure.
15. The system as claimed in claim 3, wherein one of said reservoirs further comprises an inlet port for adding liquid to replenish evaporation and a second of said reservoirs comprises an outlet port for draining excess liquid.
16. The system as claimed in claim 1, wherein said liquid is a liquid desiccant.

17. The system as claimed in claim 1, wherein said liquid is brine.
18. A method for air-conditioning an enclosed space, comprising:
providing an air-conditioning system as claimed in claim 1, and
precooling said liquid prior to entering same into the evaporator by utilizing cooled air from said space.
19. A method for air-conditioning an enclosed space, comprising:
providing an air-conditioning system as claimed in claim 4, and
utilizing the heat pump for preconditioning the liquid passing therethrough before propelling the liquid through said heat exchangers.
20. The method as claimed in claim 19, comprising extracting heat from said condensor by cooling liquid passing therethrough with cooled air.
21. The method as claimed in claim 19, comprising preheating liquid in said condensor by exchanging heat between liquid and heated air.
22. The method as claimed in claim 12, comprising heating the evaporator by liquid heated by exchanging heat between said liquid and heated air.
23. A method for evaporation of industrial wastes, comprising:
providing a system as claimed in claim 15;
replenishing the reservoir of the heat exchanger receiving fresh air from the environment with liquid desiccant, and
draining excess water from the reservoir of the other heat exchanger.